WESTON
MANAGERS DESIGNERS/CONSULTANTS

WESTON-GULF COAST LABORATORIES, INC.
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5/25/90

May 25, 1990

Mr. Joseph M. Grana
Cerro Copper Products Co.
P.O. Box 66800
St. Louis, MO 63166-6800

RE: Ground Water Sampling at Cerro Copper
WA# 0510290E
RFW# P-90-0579

Dear Mr. Grana:

Thank you for opportunity to perform ground water sampling and analytical analysis at the Cerro Copper facility in Sauget, Illinois.

Some advantages to having our field staff perform the sampling are as follows:

Our experienced field personnel will provide **efficient** and **economical** field sampling services.

Our field staff is fully acquainted with **QED dedicated monitoring well equipment (*Well Wizards*)**, and is educated on the performance/troubleshooting of these systems. Gulf Coast has installed over 600 of these systems and presently performs quarterly sampling at 35 waste management facilities throughout the midwest which have *Well Wizards*.

Our field staff has a proven track record of **reliability**; the vast majority of our work at Weston-Gulf Coast is derived from repeat business with clients.

Please see below for details regarding the field sampling, and analytical testing.

SCOPE OF WORK

Samples can be collected from the twenty-three ground water monitoring wells after an agreed upon sampling date has been arranged. Sampling would begin on a Monday and presumably end on the Thursday or Friday of the same week. It is our understanding that a representative from your company or from The Avendt Group would be on site for the first day of sampling to observe our procedures and to advise our field personnel of any necessary site specific issues which may need to be addressed, such as safety practices and containment of purge water. We would be happy to demonstrate and instruct your personnel on the use and performance of the *Well Wizard* systems.

If required, all samples will be transported by our personnel to our laboratory on a daily basis for analyses to be performed at our University Park, Illinois laboratory. Please note that having our field personnel perform the sampling could eliminate the necessity of having a daily courier, i.e. if samples were not received by our laboratory the next day, or if bottles were received broken, then the field samplers would be immediately notified and corrective action taken.

FIELD QA/QC

Procedures and the QA/QC program are outlined in the attached Field Sampling Plan.

FIELD EQUIPMENT

Sampling will be performed out of a full sized four wheel drive pickup truck. The crew will be fully equipped to perform this work. A partial list of equipment follows:

Oil-less compressors capable of delivering 80 PSI (2)

QED model 3013 Controllers (2)

Slope Indicator electronic water level indicators (2)

MFS stainless steel in-line and reservoir filter (1). This is used if dissolved parameters are required, such as dissolved metals

Beckman pH/temperature meters (2)

Cambridge specific conductivity meters (2)

Compressed nitrogen gas for inflation of the QED Purge Mizer and as a source of pressure for the reservoir filter

In addition, we provide all essential expendable items, such as laboratory grade deionized water for decontamination purposes, 0.45 micron filter paper, latex gloves for sample handling.

We recommend having the controller and driver unit purchased by your company on-site as well. These could be used as an additional unit for long purging wells, and as a backup unit for malfunctioning equipment.

LABOR

Gulf Coast field personnel will obtain all samples. Charges will be based by the hour and will cover preparation, travel, on-site and administrative time for a two person crew including truck use (excluding mileage), expendable items, and the use of sampling and decontamination equipment. Sampling charges do assume that work can be conducted in level D personal protection.

PROJECT COSTS - SUMMARY

Ground Water Monitoring - Field Sampling

Labor
Two field technicians at $ 58.00/Hour x approximately 50 hours[1]
$ 2,900.00

Transportation/Mileage
680 miles round trip at $ 0.255/mile
$ 173.40

Per Diem
Four days at $ 150.00/Day
$ 600.00

Sampling Materials and Supplies
No Charge

Daily Sample Pickup[2]
Labor and mileage (over 2,000 miles)
No Charge

Administrative - Project Management-Field
One field/project manager at $ 50.00/Hour x 3 hours
$ 150.00

Administrative - Clerical
One data clerk at $ 25.00/Hour x 3 hours
$ 75.00

TOTAL **$ 3,898.40**

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[1] *Our field personnel work at a brisk pace. It may be take considerably less time than allocated here.*

[2] If necessary.

If you have any questions regarding this cost quotation, please contact me.

Thank you for your confidence in Weston-Gulf Coast Laboratories, we look forward to working with you on this project.

Sincerely,

Weston-Gulf Coast Laboratories

Richard Wright
Field Manager

Chuck Maw
Project Manager

cc: John Boudreau, GCL-Laboratory Manager
cc: Donald Gipple, GCL-Project Director

This business proposal is hereby accepted and the conditions attached and outlined herein agreed to. In order to authorize us to proceed, please sign where indicated below, and return one copy to our laboratory at your earliest convenience. Alternatively, this work may be authorized using an original purchase order which specifies the terms discussed above.

APPROVAL by AVENDT APPROVAL by GULF COAST

By:_____ By:_____

Title:_____ Title:_____

Date:_____ Date:_____

Avendt/Cerro Copper

Field Sampling Plan

1.0 Sampling Procedures

Weston-Gulf Coast field personnel will collect ground water samples from twenty-three monitoring wells located on the Cerro Copper facility located in Sauget, Illinois during March 1990.

Water level (to the nearest 1/100th of a foot) and well depth will be measured using an electric indicator prior to purging and sampling. Rapidly recovering wells will be purged three casing volumes and low recovering wells will be purged dry and sampled within a 24 hour time frame. For the eight deep wells which have QED Purge Mizers installed, three casings, based on the volume below the packer, will be purged. Wells which do not recover enough within a 24 hour period will be declared dry. PH, specific conductance and temperature will be measured using precise and accurate portable meters. Well will be purged and sampled using existing the existing dedicated Well Wizard systems. Decontamination protocol is outlined below. Samples will be collected using lab cleaned bottles and if necessary, preserved before transport to the laboratory. Strict chain of custody will be maintained and field work will be documented (see below).

2.0 QA/QC Program

Data cannot be evaluated properly for accuracy and precision unless it is accompanied by quality assurance data. Quality assurance data are generated from the implementation of quality control procedures during the sampling. Quality control procedures that are employed to document accuracy and precision of sampling are trip blanks, field blanks and field duplicates. Two trip blanks and field blanks, and one duplicate will be prepared for each sampling event.

2.1.0 Trip Blank

This type of blank will be used to detect any contamination or cross contamination during handling and transportation. Since contamination is most likely with the volatile organic fraction, the trip blanks will be used for these constituents. These blanks consist of 40 ml sample vials of lab grade deionized water and are placed in with the other bottles prepared for sample collection.

2.1.1 Field (Equipment) Blank

Field blanks are analyzed to detect any contamination from sampling equipment, cross contamination from previously collected samples and from conditions in-situ such as airborne contaminates. Since this facility has dedicated (in-situ) sampling equipment, field blanks will be prepared in the field by exposing laboratory grade deionized water to the atmosphere and if dissolved parameters are obtained, the filter unit. The field sampler will document the procedure and the location of where the blank was prepared.

2.1.2 Field Duplicates

Duplicates are used to document precision, which is turn is a function the variance of matrix and the sampling technique. Split sampling procedures will be employed at the well which will serve as a duplicate. The duplicate sample will be assigned by the field sampler or at your request. The well which is chosen as a duplicate will not be identified as such on the chain of custody.

2.1.3 Laboratory Blanks

Quality control samples are usually performed for every 20 samples collected. For this project it is suggested that matrix spikes and matrix spike duplicates be performed for two wells. Triple sample volume would be collected for these designated points.

2.2 Decontamination Procedure

Decontamination of the stainless steel filter[3] and water level probe will be as follows:

1. Low Phosphate Detergent (Alconox) Wash
2. Deionized Water (ASTM Type II) Triple Rinse

[3] This filter is necessary only if dissolved (versus total) metals are to be analyzed.

2.3 Chain of Custody - Documentation

Chain of custody is necessary if there is any possibility that the analytical data will be used in litigation. Chain of custody will begin when the bottles are prepared at the laboratory and will be maintained throughout the sampling event. Numbered custody seals will be secured any time samples are not in view of the person assuming custody. Chain of custody forms are in triplicate, the original staying with the sample, copies for Avendt and one for the laboratory/field files.

2.3.1 Field - Documentation

Field sampling information will be documented on field information forms (see attached). Information documented will include sample time, sample ID, sample equipment used, purge data, sample appearance, weather conditions, depth to water, well depth, pH, specific conductance and comments. Like the chain of custody forms, these forms are also in duplicate.

2.4 Field Meters

Specific conductance meters will be restandardized before any readings are obtained and every four hours thereafter. Beckman pH meters will be standardized to plus or minus 0.10 units for 4, 7 and 10 standards. Cambridge specific conductance meters will be standardized to within 5% of two standards, usually 707 and 1413 *umhos/cm*. This information will be documented in a log book for future reference.

2.5 Sample Storage/Transportation

Samples will be stored under chain of custody in coolers with commercial "blue" ice. If due to extremely cold field conditions exist(<10 F), ice will not be used until samples are prepared for shipment. All samples will be shipped under chain of custody to our University Park, Illinois laboratory by overnight air courier or transported back to the laboratory by vehicle.

Analytical Costs

Analysis	Cost	Volume	Pres.
GC/MS Appendix IX VOA's	$400.00	2-40 ml	4° C
GC/MS Appendix IX BNA's	600.00	1-80 oz	4° C
Organochlorine Pest/PCB's	250.00	1-80 oz	4° C
Herbicides	250.00	1-80 oz	4° C
Organophosphorus Pesticides	200.00	1-80 oz	4° C
Dioxins and Furans[1]	900.00	1 80 oz	4° C
Metals (17)	250.00	1 L	4° C, HNO_3
Sulfide	25.00	1 L	Zn Acetate, NaOH
Cyanide	35.00	1 L	NaOH
Total per Sample	$2,910.00		

[1] If tetra dioxins are detected, confirmation for 2,3,7,8-TCDD is required. The cost is an additional $350.00. The dioxin and furan analysis will be conducted at Lionville Analytical Laboratory, Lionville, Pennsylvania.

For required quality control information, it is necessary to provide 2 times the normal sample volume for each parameter. Quality control samples are usually recommended for every 20 field samples, for this project of 23 field samples it is recommended to send extra sample for QC on 2 of the field samples.